

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

November 20, 2012

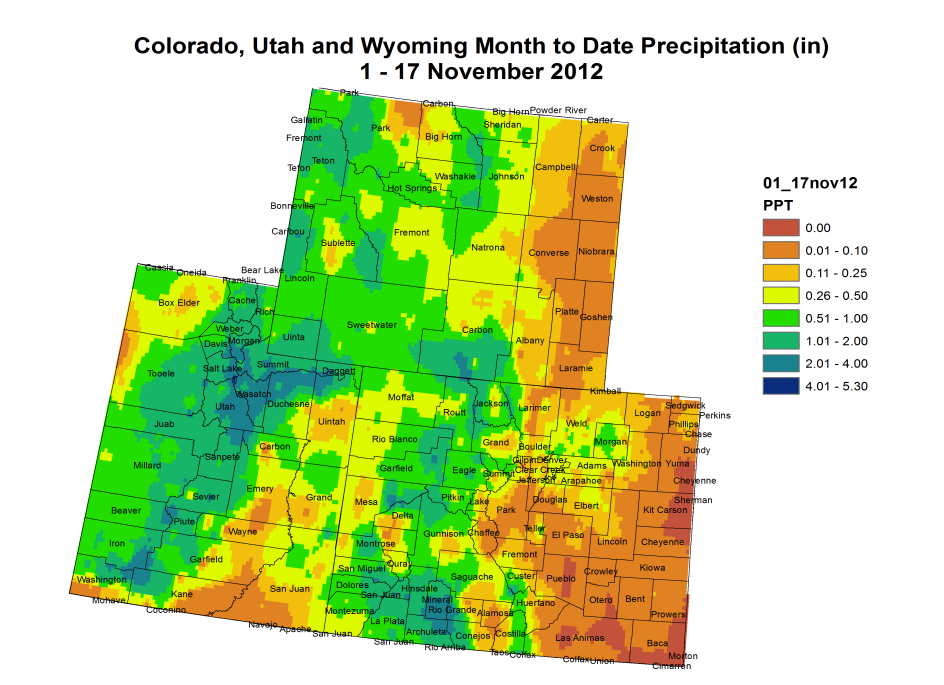


Fig. 1: November 1 – 17 precipitation in inches.

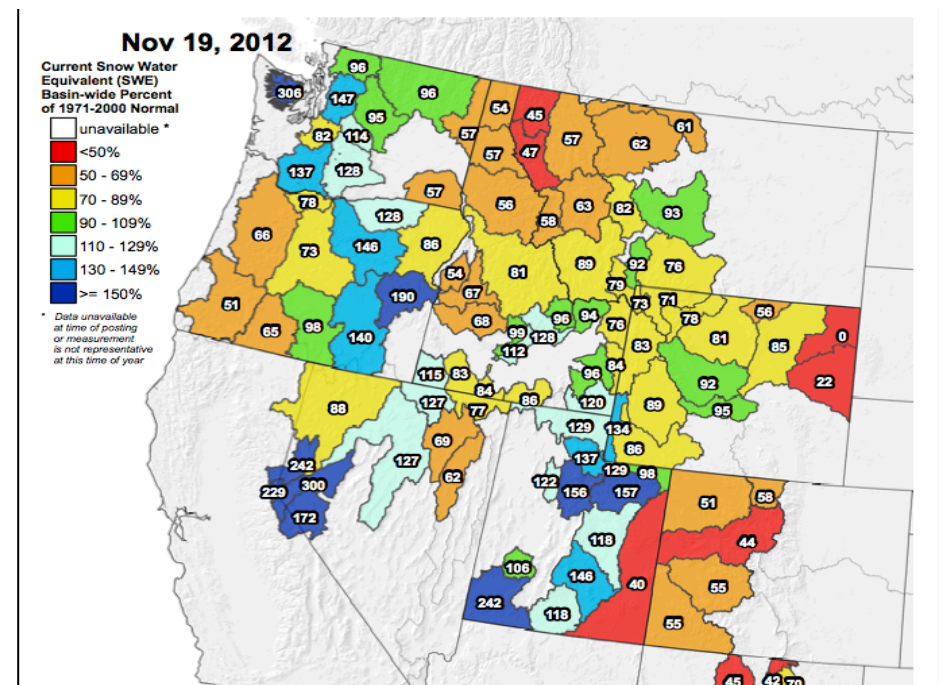


Fig. 2: Basin-averaged snow water equivalent as a percent of average, as of November 19th.

Precipitation

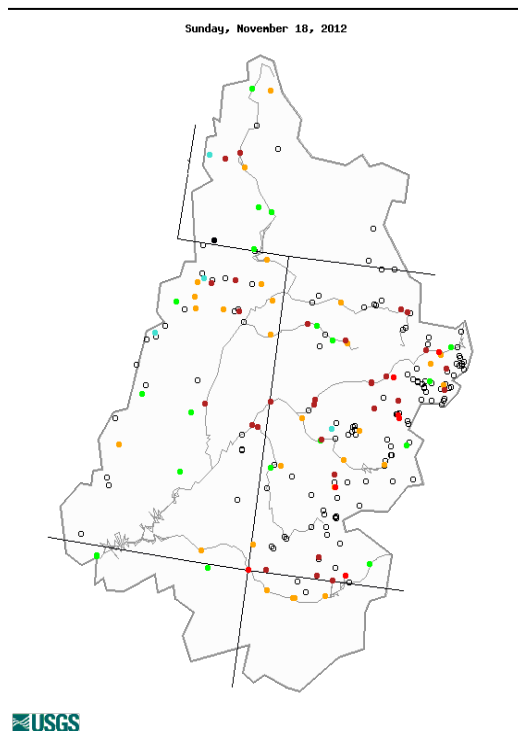
Since the beginning of November, most of the higher elevations of the Upper Colorado River Basin (UCRB) have received over half an inch of moisture (Fig. 1). The San Juans in southwest Colorado, and the Wasatch and Uintah ranges in Utah have received between one and four inches since the beginning of the month. The Upper Green region and the CO northern mountains have seen between .50 and 2 inches, while the lower elevations have received less than .50 inches in many areas. East of the UCRB, most of eastern CO has received less than .25 inches for the month, with some isolated areas in northeast CO receiving over .50 inches. Last week the higher elevations received some moisture (though below average) while eastern CO received little to no precipitation for the week.

Accumulated snowpack is currently less than average on the east side of the UCRB and greater than average on the west side of the basin (Fig. 2). Sub-basins in western CO and along the Colorado River valley in eastern UT are all below 60% of average snowpack. Northeast and central UT sub-basins are mostly above 120% of average, and snowpack in southwest WY is just below 90% of average.

Streamflow

As of November 18th, about 28% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) to above normal 7-day average streamflows (Fig. 3). About 41% percent of the gages in the basin are recording much below normal or low (i.e. lowest on record) streamflows, and only four gages recorded above normal flows. Much below normal flows are concentrated around the Colorado River headwaters region and along the Upper San Juan River. The best conditions (near normal) are concentrated around the Upper Green River. It is important to note that with baseflows dominating during this time of year, small changes in flows can lead to large percentile changes.

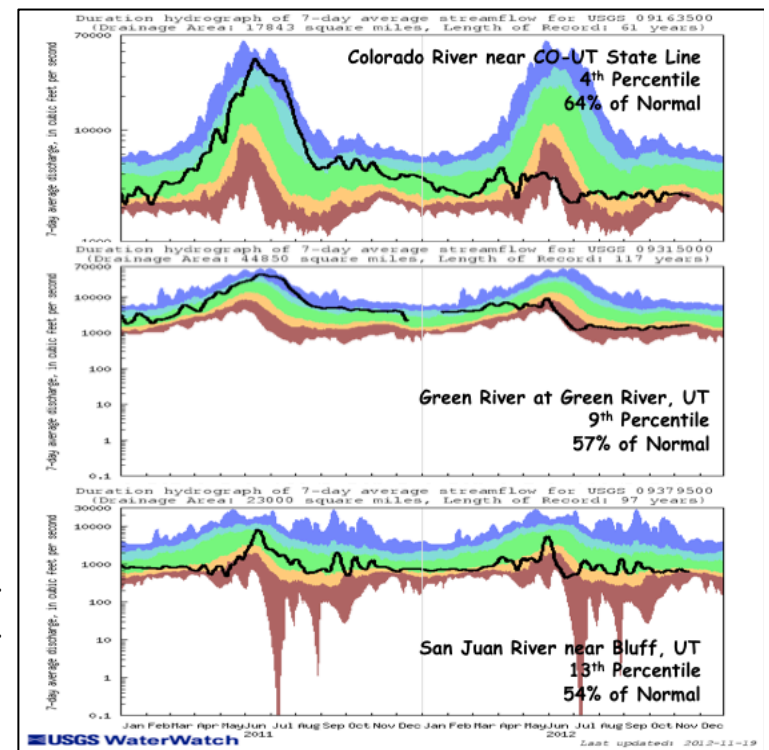
Flows on two of the three key gages across the basin are in the much below normal range (Fig. 4). Flows on the Colorado River near the CO-UT state line and the Green River at Green River, UT have stayed fairly consistent over the past few weeks and are at the 4th and 9th percentiles, respectively. Flows on the San Juan River near Bluff, UT are currently at the 13th percentile, in the below normal range.



Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 3: 7-day average discharge compared to historical discharge for November 18th.

Fig. 4: USGS 7-day average discharge over time at the CO-UT stateline (top), Green River, UT (middle) and Bluff, UT (bottom).



Water Supply and Demand

Last week most of the UCRB experienced near average to below average temperatures. Temperatures were near to slightly cooler than average in the northern part of the basin with temperatures 3 to 6 degrees cooler than average throughout the southern half of the basin. East of the UCRB, temperatures throughout most of eastern CO were also near average to below average. The VIC soil moisture model shows extremely dry soils through most of WY, with soil dryness below the 20th percentile in northeast UT and northwest CO (Fig. 5). Slight improvements in soil moisture have shown up over northern UT and western WY after a decent start to the water year. Deteriorating soil moisture conditions are showing up over southwest CO. Dry soils also show up in southeast CO with near normal soil moisture in north-central CO and in the San Luis Valley in southern CO.

Most of the major reservoirs in the basin are between 60% and 85% of their November averages. Blue Mesa is the lowest, at 55% of its average November storage volume, and Flaming Gorge is the highest, at 99% of average. Most of the reservoirs have seen only slight decreases in volume since the beginning of the month, which is normal for this time of year. Dillon and Green Mountain have seen over 1% decreases, and Lake Granby has seen a slight increase in volume.

Precipitation Forecast

Conditions over the UCRB will stay mostly dry throughout the upcoming work week as a large area of low pressure continues to remain firmly anchored off the west coast. This pattern will result in the jet stream shifting northward into the Pacific Northwest, and will leave the UCRB underneath dry southwesterly flow aloft. Precipitation will be hard to come by during this period, with the exception of a few light snow showers possible over the mountains in the far north in proximity to the active northwest storm track (Fig. 6). The next opportunity for precipitation does not appear to be until late in the weekend with the arrival of a cold front moving into northern sections of the basin. While significant discrepancies exist between forecast models this far out in the forecast, expect to see a better chance of snow showers move into northern and western portions of the basin by sometime late this weekend or early next week.

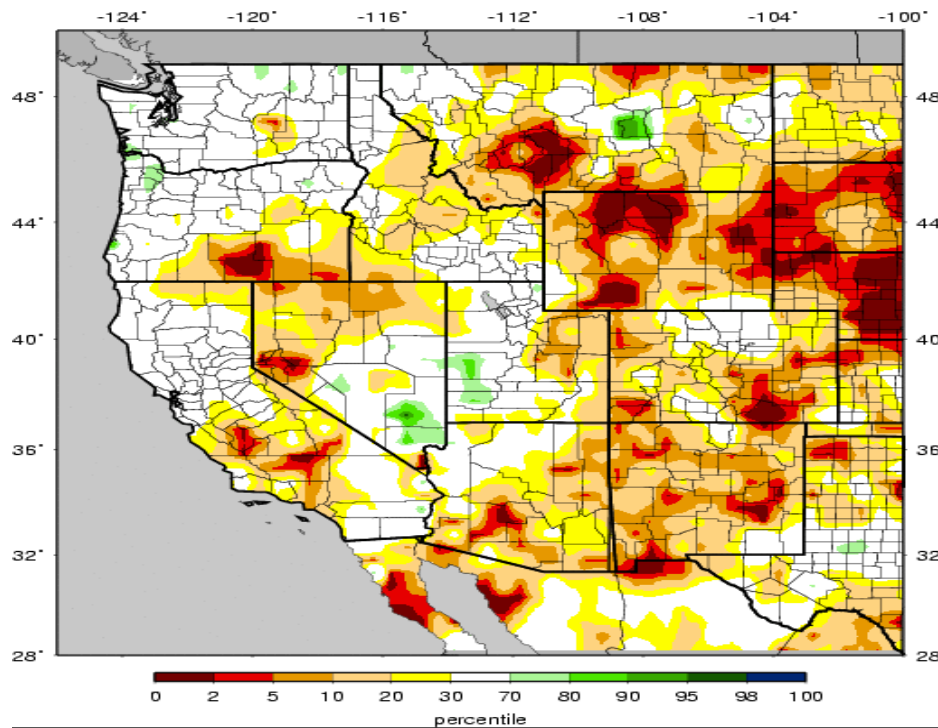


Fig. 5: VIC modeled soil moisture percentiles for the western U.S. as of November 17th.

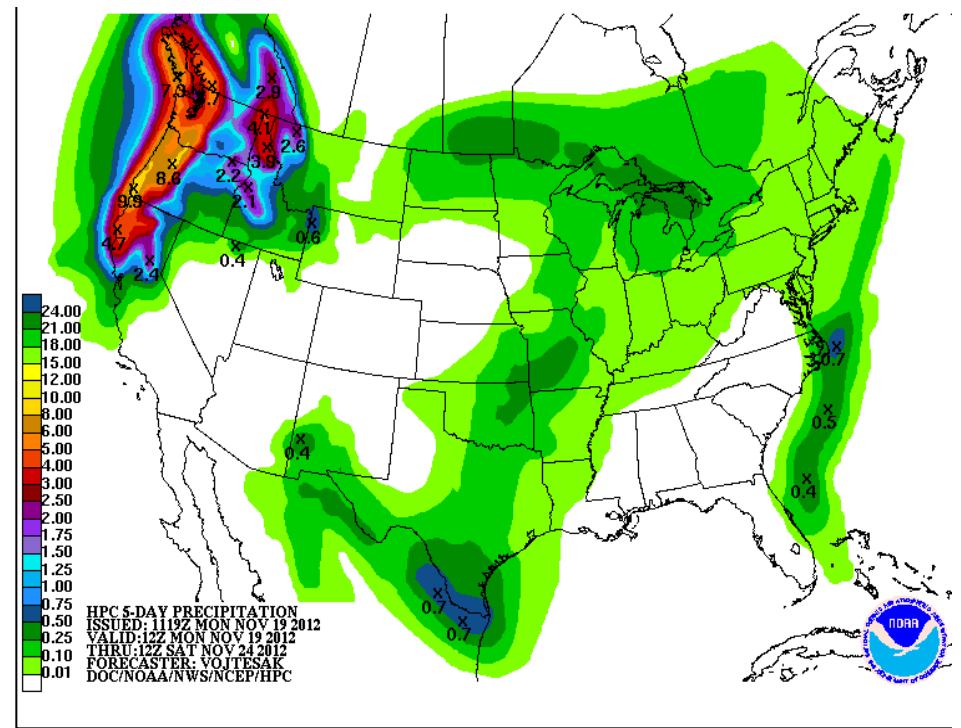


Fig. 6: Quantitative precipitation forecast (QPF) by the Hydrologic Prediction Center out to 12UTC Saturday.

Drought and Water Discussion

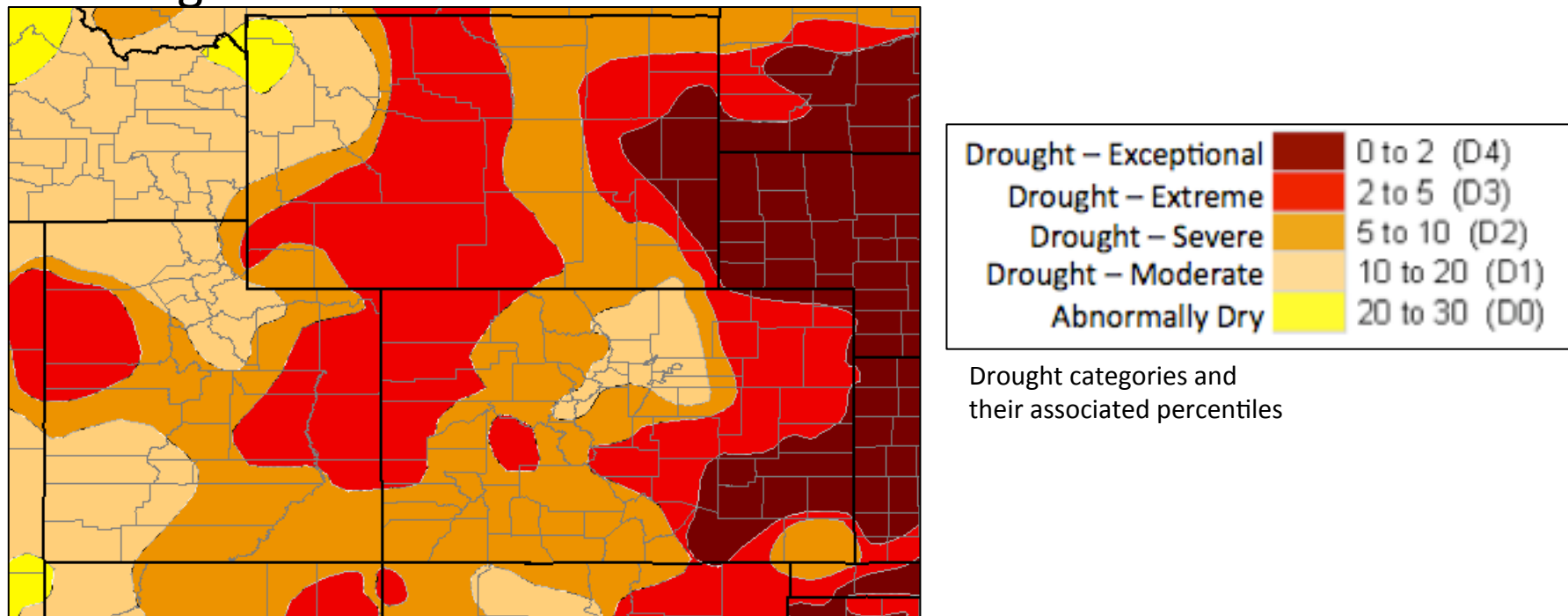


Fig. 7: November 13th release of U.S. Drought Monitor for the UCRB.

UCRB: Status quo is recommended for the UCRB in the current depiction of the U.S. Drought Monitor (USDM) map (Fig. 7).

Eastern CO: The USDM author has expanded the D4 in northeast CO (expanded over Logan, Phillips, Yuma and Kit Carson counties) to better match with AHPS precipitation, NLDAS soil moisture, and the vegetation health index (VHI). Longer term standardized precipitation indices (SPIs), 6 months and longer, support D4 in the region. Slight improvements were previously made over the area last week, and the initial consensus was for status quo over the area this week: Short-term SPIs look significantly better, the VIC modeled soil moisture shows improvement over the region, impacts are low at this time and grasslands are already dormant. It is recommended that the area stay status quo, but we will ultimately defer to the decision of the USDM author.